RESEARCH PROPOSAL

Relationship between Financial Risk and Performance: Evidence from Indian Banks

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Title

Relationship between Financial Risk and Performance: Evidence from Indian Banks

Introduction

It is clear that fundamental role of banks is to lend money to the people and business organization to fulfil their needs for funds. But this responsibility of lending money comes with a risk, risk of non-payment of money by the borrower, and this risk is called as financial risk. At present times Financial Risk is considered as one of the major concerns of every enterprise across all the geographies. Financial risk is measured by Return of Assets (ROA)/ Return of Equity (ROE). ROE/ROA is an indicator of profitability of a firm. It indicates the profitability of a firm in relation to its total assets. It gives idea of efficiency of management at using its assets in generating its earnings.

Financial risk is a risk of high priority out of all the risks for every business. This risk is caused due to market movements and these market movements contains host of factors. On the basis of this, financial risk is classified into four types: Market Risk, Credit Risk, Liquidity Risk, interest rate risk.

TYPES OF FINANCIAL RISK

1. **CREDIT RISK** – Another name of credit risk is default risk. This type of risk arises when people who borrowed money became defaulter or unable in repaying the amount and these people go into default. Credit risk results in decreased income, lost principal and interest, rise in cost of collection for the investors.This risk is measured on the basis of
    - Non – performing loan to loan advances (NPL/LA)
    - Ratio of total loan & advances to total deposit (LA/TD)
    - Ratio of loan loss provision to classified loans (LLP/CL)

2. **LIQUIDITY RISK** - Liquidity risk involves securities and assets that cannot be purchased or sold fast enough to cut losses in a volatile market. Asset-backed risk is the risk that asset-backed securities may become volatile if the underlying securities also change in value. The risks under asset-backed risk include prepayment risk and interest rate risk. Measurement of liquidity risk depends on following:
    - Deposit
    - Cash

- Liquidity gap
- Non-performing loan

3. **MARKET RISK** - This is the most familiar of all risks. Also referred to as volatility, market risk is the day-to-day fluctuation in a stock's price. Volatility is a measure of risk because it refers to the behaviour, or "temperament", of your investment rather than the reason for this behaviour. Because market movement is the reason why people can make money from stocks, volatility is essential for returns, and the more unstable the investment the more chance there is that it will experience a dramatic change in either direction.
   Market risk is measured on the basis of recessions, political turmoil, and changes in interest rates, natural disasters and terrorist attacks.

4. **INTEREST RATE RISK** - Economic conditions cause interest rate risk.Interest rate risk affects the value of bonds more directly than stocks, and it is a major risk to all bondholders. As interest rates rise, bond prices fall, and vice versa. The rationale is that as interest rates increase, the opportunity cost of holding bond decreases, since investors are able to realize greater yields by switching to other investments that reflect the higher interest rate.
   Interest rate risk is measured on the basis of recessions, political turmoil, and changes in interest rates, natural disasters and terrorist attacks.

Review of Literature

A literature review is an evaluative report of information found in the literature related to selected area of study. The review should describe, summarise, evaluate and clarify this literature. It should give a theoretical base for the research and help the author determine the nature of your research. Works which are irrelevant should be discarded and those which are peripheral should be looked at critically.

.For compiling the article sample, a literature review was carried out in selected database. Sources for articles searched have been provided in table 3.1

Table 3.1 sources of searched articles

Name of source	No of articles selected	Time horizon
Elsevier	17	1968-2017
researchgate.net	1	1968-2017
academia.edu	3	1968-2017
asecu.gr	1	1968-2017
Citeseer	1	1968-2017
clutejournals.com	1	1968-2017
emeraldinsight.com	2	1968-2017

curve.coventry.ac.uk	1	1968-2017
doiserbia.nb.rs	1	1968-2017
ieeexplore.ieee.org	2	1968-2017
inspirajournals.com	1	1968-2017
ijept.org	1	1968-2017
JSTOR	1	1968-2017
journals.sagepub.com	1	1968-2017
Proquest	2	1968-2017
papers.ssrn.com	5	1968-2017
Taylor & Francis	1	1968-2017
researchgate.net	1	1968-2017
Wiley Online Library	5	1968-2017
Springer	1	1968-2017
usm.my	1	1968-2017
thejournalofbusiness.org	1	1968-2017

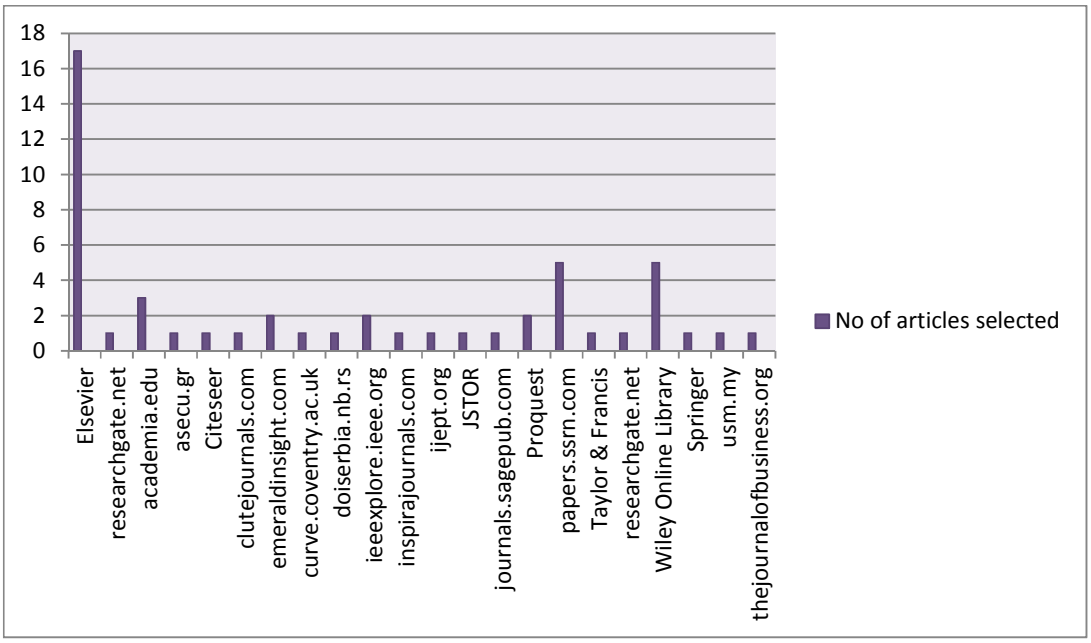

Figure no 1

Various techniques were used in the articles for assessing the results which are shown in the table 3.2.

Table 3.2 Techniques

Techniques	No of papers
Artificial neural network	6
Multiple regressions	5
ANOVA	1
Multiple discriminate analysis	3
CAMEL rating	1
panel model	4

Ratio analysis	3
Data Envelopment Analysis	2
Multivariate logit econometric model	1

Description and classification of literature

All the articles identified are analysed in this section with respect to publication year, methodology used, journal of publication and country studied. It is done to understand the trends and issues in the literature relevant to financial risk.

Analysis by year of publication

The analysis by year of publication provides the time horizon for selection of articles. In the bar chart presented in figure provides that the highest no of paper were collected in year 2012. There is a mix trend in the years; there is no upward and downward trend. Maximum papers were collected from 2011 to 2012.

Table 3.3 Year of Publication

Year	No of papers
1968	1
1980	1
1988	1
1990	1
1994	1
1997	1
1998	1
1999	1
2000	2
2001	1
2002	2
2003	2
2004	2
2005	2
2006	1
2007	1
2008	5
2009	6
2010	1
2011	6
2012	7
2013	2
2016	1
2017	1

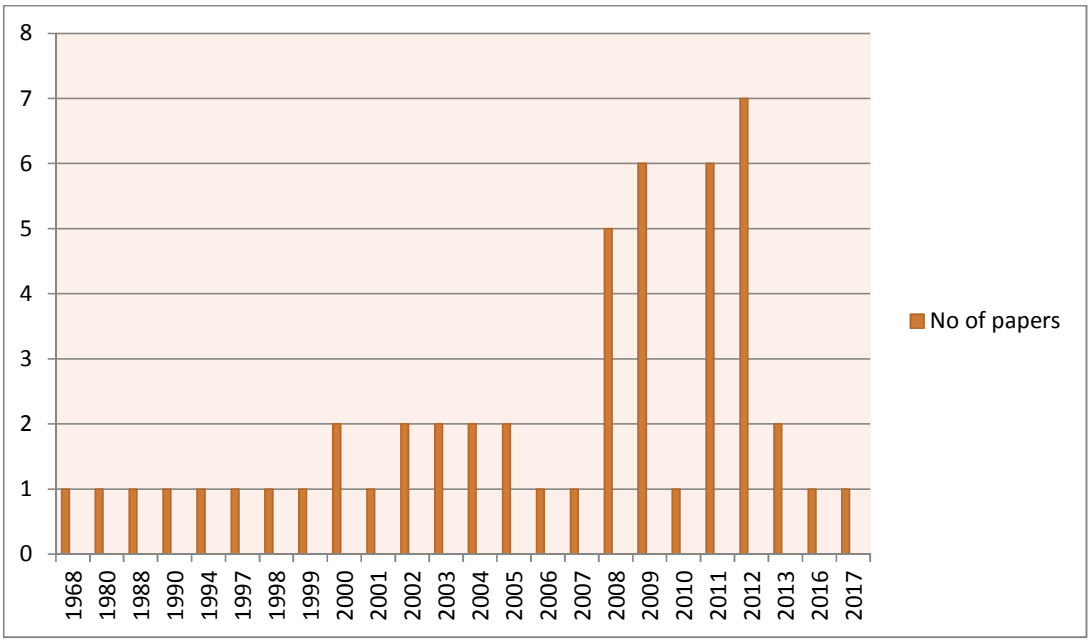

Figure no 2

Analysis by country studied

The analysis by country illustrated a wide range of experience from the literature on financial risk. Table 3.4 reports the countries chosen for selection of sample by the selected articles for research. Researchers mainly focus on a single country setting for their study. List of countries with one or more research articles is resented in table. It is clear from the table that the highest no on articles have been selected from India and some paper do not contain any specification with country name.

Table 3.4 country

Country	No of articles
Europe	3
GREECE	3
Greek	2
India	3
Islam	1
Kenya	3
Korea	1
Turkey	3
United states	5
Others	26

The analysis by journal aims to identify the journals most involved the conversations of literature of financial risk. In total 41 journals contained the selected articles. Table 4.3 presents the name of journals from which the articles were selected. Journal of Banking &Finance, provides maximum of four articles, followed by The Journal of Finance with 3 and Expert systems with applications with 2 articles published on financial risk during 1968-2017.

Table 3.5 Name of journals

Name of journalism	No of articles
Australian journal of business and management research	1
Altunbas, Y., Gambacorta, L., & Marques-Ibanez, D.	1
Business and Economics Research Journal	1
International journal of business and social research	1
Economic Modelling	1
Expert systems with applications	2
European journal of operational research	1
Economic annals	1
European Financial Management	1
In 17th Conference on the theories and practices of securities and financial markets	1
In Money Macro and Finance (MMF) Research Group Conference	1
Interdisciplinary Journal of Research in Business	2
International Journal of Business and Public Management	1
International Journal of Economic Practices and Theories	1
International Research Journal of Finance and Economics	1
International Journal of Economics and Financial Issues	1
International Journal of Business and Management	1
International business and economics research journal	1
Journal of accounting research	1
Journal of Banking & Finance	4
JCNN International Joint Conference on IEEE.	1
Journal of Economics and Business	2
Journal of Economics, Finance and Administrative Sciences	1
Journal of Economics and Financial Issues	1
Journal of Financial Regulation and Compliance	1
Journal of international financial Markets, Institutions and Money	1

Journal of Financial economics	1
Journal of financial intermediation	1
Journal of the Operational Research Society	1
Journal of Modern Management & Entrepreneurship (JMME)	1
Journal of Money, Credit and Banking	2
Neurocomputing	1
Omega	1
Managerial Finance	1
National Institute Economic Review	1
South-Eastern Europe Journal of Economics	1
Socio-Economic Planning Sciences	1
Staff Papers	1
Policy Research Working Paper	1
The Journal of Finance	3
University of Bath School of Management	1

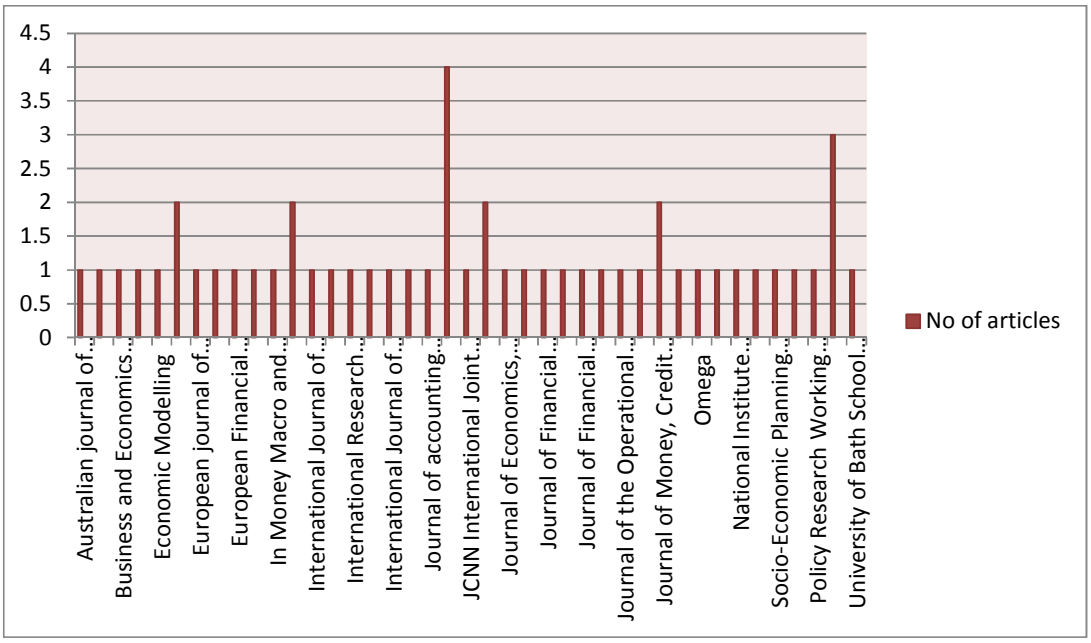

Figure no 3

Citation analysis

Citation means that someone has referenced work of other author(s). The citation analysis means studying cited references of a population of articles to find the most influential works in the field. This section examined the cited references of the financial risk articles to observe the quality of articles and to find out the most important articles. We have used the citation information provided by Google scholar for the purpose citation analysis. The most cited articles with their citation are illustrated in the table no 5.1. Financial ratios, discriminant analysis and Prediction of corporate bankruptcy (1968) is the most cited paper with 14043 citations, followed by Financial Ratios and the Probabilistic Prediction of Bankruptcy (1980) with 5818 citations.

Most cited papers

Paper Title / Year	Year	Author	citation
Financial ratios. Discriminant analysis and the prediction of corporate bankruptcy	1968	Altman	14948
Financial Ratios and the Probabilistic Prediction of Bankruptcy	1980	JAMES A. OHLSON	6028
The determinants of banking crisis in developing and developed countries	1998	A Demirgüç-Kunt,	2122
Bank Lending During the Financial Crisis of 2008	2008	Victoria Ivashina	2011
Bank-Based or Market-Based Financial Systems:	2002	Ross Levine	1756
BANK-SPECIFIC, INDUSTRY-SPECIFIC AND MACROECONOMIC DETERMINANTS OF BANK PROFITABILITY	2005	Athanasoglou	1532
Risk in Banking and Capital Regulation	1988	DAESIK KIM	1201
A NEURAL NETWORK MODEL FOR BANKRUPTCY PREDICTION	1990	Marcus D. Odom	1066
Bankruptcy Prediction for Credit Risk Using Neural Networks: A Survey and New Results	2001	Amir F. Atiya	728
Artificial neural networks in bankruptcy prediction: General framework and cross-validation analysis	1999	Guoqiang Zhang	662

Cross-Country Empirical Studies of Systemic Bank Distress:	2005	AslıDemirgüç-Kunt	625
Risk management , capital structure and lending at banks	2004	AS Cebenoyan	579
Macroeconomic and bank specific determinants of non-performing loans in Greece: A comparative study of mortgage, business and consumer durable loan.	2011	DP Louzis	578
NON PERFORMING ASSETS OF PUBLIC AND PRIVATE SECTOR BANKS	2017	BhawanaKumari	560
NON PERFORMING ASSETS OF PUBLIC AND PRIVATE SECTOR BANKS	2017	BhawanaKumari	560
The determinants of banks' profits in Greece during the period of EU financial integration	2008	Kosmidou	450
BANKS' ADVANTAGE IN HEDGING LIQUIDITY RISK: THEORY AND EVIDENCE FROM THE COMMERCIAL PAPER MARKET	2003	Evan Gatev	440
Examining the Relationships between Capital, Risk and Efficiency in European Banking	2007	YenerAltunbas	432
Does monetary policy affect bank risk-taking?	2010	Y Altunbas	388
The Determinants Of European Bank Profitability	2004	Christos K. Staikouras	387
Determinants of Financial Performance of Commercial Banks in Kenya	2013	Ongore	369
Bankruptcy prediction using case based reasoning, neural network	1997	H Jo	325

and discriminant analysis			
Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability: Empirical Evidence from Turkey	2011	DegerAlper	301
Bank Competition and Financial Stability:	2008	Thorsten Beck	276
Predicting Large U.S. Commercial Bank Failures (JAN 2000)	2000	J Kolari	267
Determinants of commercial bank profitability in Malaysia	2002	BK Guru	254
Determinants of profitability of domestic UK commercial banks: panel evidence from the period 1995-2002	2012	Kosmidou	229
Financial crises and bank failures: a review of prediction methods	2009	YuliaDemyanyk	219
Using neural network and data mining techniques for the financial distress prediction model	2009	WS Chen	209
Neural Networks, Decision Tree Induction and	1994	STEPHEN P. CURRAM	191
A Comparison of Financial Performance in the Banking Sector: Some Evidence from Omani Commercial Banks	2006	MedhatTarawneh	190
MEASUREMENT OF BANK PERFORMANCE IN GREECE	2008	KYRIAKI KOSMIDOU	172
A credit scoring approach for the commercial banking sector	2003	AhmetBurakEmel	170
Systematic and Unsystematic Risk Determinants of Liquidity Risk Between Islamic and Conventional Banks	2016	Waeibrorheem	155
CREDIT RISK AND	2012	KOLAPO	153

COMMERCIAL BANKS' PERFORMANCE IN NIGERIA: A PANEL MODEL APPROACH			
DETERMINANTS OF BANK PROFITABILITY: EVIDENCE FROM THE GREEK BANKING SECTOR	2009	ConstantinosAlexiou	147
Liquidity Risk Management: A comparative study between Conventional and Islamic Banks of Pakistan	2011	Muhammad FarhanAkhtar	128
A comprehensive analysis of the effects of risk measures on bank efficiency: evidences from emerging Asian countries	2011	Lei sun	119
The Relationship between Liquidity Risk and Credit Risk in Banks	2013	BjörnImbierowicz	109
Bank Liquidity Risk and Performance	2009	Chung-HuaShen	105
A cross model study of corporate financial distress prediction	2009	Tzong-Huei Lin	99
Liquidity risk and performance of banking system	2012	Ahmed Arif	99
Insolvency Prediction Model Using Multivariate	2008	Kim-Choy Chung	79
Bank Earnings Management and Tail Risk during the Financial Crisis	2012	Lee J. Cohen	74
Prediction of bank financial strength ratings: The case of turkey	2012	R Aktaş	53
The impact of credit risk management on the financial performance of Banks in Kenya	2012	DansonMusyoki	40

for the period 2000 – 2006			
Credit Risk Determinants of Public and Private Sector Banks in India	2011	Somanadevi	35
A Comparative Study of Non-Performing Assets in Indian Banking Industry	2011	PachaMalyadri	24
EFFECT OF CREDIT RISK MANAGEMENT TECHNIQUES ON THE PERFORMANCE OF UNSECURED BANK LOANS EMPLOYED COMMERCIAL BANKS IN KENYA	2012	Prof. R.W Gakure	23
Assessing Bank Performance with Operational Research and Artificial Intelligence Techniques: A Survey	2009	Duygun-Fethi	11

Review of Articles

BhawanaKumari and Dr. Sanjay Biyani in (2017), performed a study on Non - performing assets of public and private sector banks , The study was conducted with an objective to analyse the position of Non-Performing assets in public and private sectors banks in India. The extent of the investigation was limited to the examination of NPAs in private banks over the time period of 2006-2015. Through ratio analysis it was concluded that level of NPAs had increased year on year basis in both public and private banks.

WaeibrorheemWaemustafa and SurianiSukri in (2016), performed study on Systematic and Unsystematic Risk Determinants of Liquidity Risk between Islamic and Conventional Banks , this study made an attempt to investigate the influence of both internal and external factors on liquidity risk of Islamic and conventional banks. Through multivariate regression analysis it was analysed that 4 out of 14 bank-specific factors and one macroeconomic factors has a significant on liquidity risk on Islamic banks while in case of conventional banks 5 out of 13 factors has significant impact on liquidity risk..

Vincent OkothOngore and GemechuBerhanuKusa in (2013), performed study on Determinants of Financial Performance of Commercial Banks in Kenya,in this study author made an attempt to examine the effects of bank specific and macroeconomic factors on performance of commercial banks in Kenya. It was found that bank specific factors significantly affect the performance of banks in Kenya. Board and management decisions have a significant impact on performance of commercial banks in Kenya in comparison to macroeconomic factors.

BjörnImbierowicz and Christian Rauch in (2013) conducted research on The Relationship between Liquidity Risk and Credit Risk in Banks; in this study an attempt was made to investigate the relationship between two main sources of bank's default risk i.e liquidity and credit risk. it was clear from the results that both risk categories do not have any time-lagged relationship between them , however they do influence bank's probability of default.

Kosmidou and Pasiouras, F in (2012) conducted research on Determinants of profitability of domestic UK commercial banks: panel evidence from the period 1995-2002, in this study it was investigated that UK owned commercial bank's profits was impacted by bank-specific characteristics, macro-economic conditions and financial market structure during the period 1995-2002. It was clear from the result that capital strength has a positive and dominant influence on profitability of banks, the other significant factors being efficiency management and bank size.

KOLAPO, T. Funso and OKE, M. Ojo in (2012) performed research on Credit risk and commercial bank's performance in Nigeria: A panel model approach, in this empirical investigation was conducted to know the quantitative effect of credit risk on the performance of commercial banks in Nigeria over the period of 11 years (2000-2010). It was clear from the results that the impact of credit risk on bank performance measured by return on assets was cross-sectional variant.

Ahmed Arif and Ahmed NaumanAnees in (2012), performed study on Liquidity risk and performance of banking system, the study was conducted with an objective to evaluate the effect of liquidity risk on Pakistani banks profitability. The use of multiple regression shows that liquidity risk has a negative relationship with profitability.

Lee J. Cohen and Hassan Tehranian in (2012), conducted research on Bank Earnings Management and Tail Risk during the Financial Crisis,the study was conducted to show a pattern of earning management in bank financial statement as it has little bearing on downside risk during quiet periods, but it seems that it his has big impact during financial crisis. Banks which were demonstrating more aggressive earning management prior to 2007 exhibit substantially higher stock market risk. Crash in stock market prices helped in predicting future deterioration in operating performancewhich can be interpreted by bank regulators as an early warning signs of impending problems.

HulisiOgut and R Aktaş in (2012), conducted research on Prediction of bank financial strength ratings: The case of turkey, the study was conducted with an objective to forecast ratings of banks with use of operational and financial variables and also to determine the variable that plays an important role in assigning ratings. it was clear from the results that efficiency , profitability and proportion of loan in assets were the most important factors and it was also suggested that predictions were consistent with those of Moody's financial strength ratings.

DansonMusyoki and Adano Salad Kadubo in (2012), performed research on The impact of credit risk management on the financial performance of Banks in Kenya for the period 2000 – 2006 , the study was conducted with an objective to assess various parameters significant to credit risk management as they affect financial performance of banks. These parameters include default rate, bad debts cost and cost per loan asset.it was clear from the results that all these parameters have an adverse impact on financial performance of banks , out of three parameters default risk is the most important predictor of financial performance of banks.

Prof. R.W Gakure and Simon MainaWaithaka in (2012), conducted study on Effect of credit risk management technique on the performance of unsecured bank loans employed commercial banks in Kenya,author conducted this study with an objective to

identify the effect of credit risk management techniques on the performance of unsecured loans of commercial banks in Kenya. the study concluded that credit approval guidelines and monitoring of borrowers has an effect on performance of unsecured banks loans to a great extent and it clearly establishes the process for approving new credits and extending the existing credits has been observed to be very important while managing Credit Risks in banks.

Panayiotis Athanasoglouand Matthaios Delis in (2011), conducted research on Macroeconomic and bank specific determinants of non-performing loans in Greece: A comparative study of mortgage, business and consumer durable loan, author conducted this study with an objective to examines the determinants of non-performing loans in banking sector in Greek.The study was motivated by a hypotheses that both macroeconomic and bank specific variables have an effect on loan quality and these affects vary between different loan categories. It was clear from the results that in the Greek management system NPLs can be explained mainly by macro-economic variables (GDP, interest rates, and public debt) and management quality.

DegerAlper and Adem Anbar in (2011), conducted research on Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability: Empirical Evidence from Turkey, the study was conducted with an objective to examine the bank-specific and macroeconomic determinants of bank's profitability in Turkey during the time period of 2002-2010. The profitability of banks was measured by Return of assets (ROA) and Return on equity (ROE). Results through balanced Panel data shows that asset size and non-interest income has a significant impact on profitability of banks. It was suggested that bank can improve their profitability through increasing bank size and non-interest income, decreasing credit/asset ratio.

Muhammad FarhanAkhtar and ShamaSadaqat in (2011), conducted research on Liquidity Risk Management: A comparative study between Conventional and Islamic Banks of Pakistan, the study was conducted with an objective to investigate the significance of size of firm, networking capital, return on equity, capital adequacy and return on assets on liquidity risk management in Islamic and conventional banks of Pakistan. The results show positive and insignificant relationship of size of the bank and networking capital to net asset with liquidity risk.

Lei sun and Tzu-Pu Chang in (2011), performed study on A comprehensive analysis of the effects of risk measures on bank efficiency: evidences from emerging Asian countries, the author conducted this study with an objective to explore the risk in determining the cost efficiency of international banks in emerging Asian markets. Heteroscedastic and non-monotonic stochastic frontier approach was used and author found that each risk measure presents a dissimilar effect on banks' efficiency.

SomanadeviThiagarajan and A. Ramachandran in (2011), conducted study on Credit Risk Determinants of Public and Private Sector Banks in India, in this empirical study was conducted to predict the determinants of credit risk in Indian commercial banking sector by using an econometric model. Panel data of 22 public sectors and 15 private sector banks were used and has shown some unique determinants of credit risk in endian commercial banking sector.Through results it was shown that the non-performing assets had a strong and statistically significant positive influence on the current non-performing assets.

PachaMalyadri and S. Sirisha in (2011), conducted research on A Comparative Study of Non-Performing Assets in Indian Banking Industry, in this study the author with reference to weaker sections tried to examine the state of affair of the Non-performing Assets (NPAs) of the public sector banks and private sector banks in India. Statistical tools like Compound Annual Growth Rate(CAGR) and percentages were used to analyse the data. It was clear from the results that the public sector banks have achieved a greater penetration compared to the private sector banks in the weaker sections.

Altunbas and David in (2010), conducted research on Does monetary policy affect bank risk-taking?,in this study author tried to identify the relationship between short-term interest rates and bank risk. It was found that unusually low interest rates over an extended period of time contributed to an increase in banks' risk, by using quarterly balance sheet information for listed banks operating in the European Union and the United States of the last decade.

YuliaDemyanyk and IftekharHasan in (2009), conducted research financial crises and bank failures: a review of prediction methods, in this paper author tried to analyse the financial and economic circumstances associated with subprime mortgage crisis in the united states, along with this an extensive review of intelligence techniques used in the operations research literature to predict bank failures was also provided.

WS Chen and Yin-kuan Du in (2009) conducted research on Using neural network and data mining techniques for the financial distress prediction model in this paper by aiming at financial statement, uses BPN and clustering model to compare the performance of the financial distress prediction so as to find a better early warning method. As per this paper artificial intelligence (AI) approach was considered more suitable methodology than traditional for predicting the potential financial distress of a company.

ConstantinosAlexiou and VoyazasSofoklis in (2009) , conducted research on Determinants of bank profitability: Evidence from the Greek banking sector in this paper an investigation was made by author to know the effects of bank-specific and

macroeconomic determinants of bank profitability , for this an empirical framework that incorporates the traditional Structure-Conduct- Performance (SCP) hypothesis was used. It was suggested that for any consistent or systematic size the profitability relationship was relatively weak. Bank specific factor were found more significant affecting the bank's profitability.

Chung-HuaShen and Chuan-Yi Yeh in (2009) ,conducted research on Bank Liquidity Risk and Performance , they conducted this study with an objective the objective of author for conducting this study was to employ alternative liquidity risk measures besides liquidity ratio in order to investigate the causes of liquidity risk. For this author uses an unbalanced panel dataset of 12 advanced economies commercial banks over the period 1994-2006. It was clear from the result that liquidity risk was negatively related to bank performance in market based financial system while it has no effect on bank performance in bank-based financial system.

Tzong-Huei Lin in (2009), conducted research on A cross model study of corporate financial distress prediction in Taiwan: Multiple discriminant analysis, logit, probit and neural networks models, this study was conducted to study the predictive accuracy of the three commonly used financial distress prediction models. In future it can be used to integrate the corporate governance variables with financial variables into the financial distress prediction models and compare the predictive ability with this study.

MeryemDuygun-Fethi and FotiosPasiouras in (2009), conducted research on Assessing Bank Performance with Operational Research and Artificial Intelligence Techniques: A Survey, in this author presented a comprehensive review of 179 studies which employ operational research (O.R.) and Artificial Intelligence (A.I.) techniques in the assessment of bank performance. In this paper author discussed about numerous applications of data envelopment analysis widely applied in O.R technique field. In the second half author discussed various other applications such as neural networks, support vector machines, and multicriteria decision aid that have also been used in recent years, in bank failure prediction studies and the assessment of bank creditworthiness and underperformance.

Victoria Ivashina and David Scharfstein in (2008), conducted research on Banks' Lending during the Financial Crisis of 2008, in this paper author document that there was a fall in new loans to large borrowers by 37% during the peak period of the financial crisis (September -November 2008) in relation to prior three month period and by 68% relative to the peak of the credit boom (Mar-May 2007).New lending for real investment (such as capital expenditures) fell to the same extent as new lending for restructuring (LBOs, M&A, share repurchases).

KyriakiKosmidou in (2008), conducted research on the determinants of banks' profits in Greece during the period of EU financial integration, in this paper author analysis the effect of management's decision , policy objectives and overall banking environment on the performance of banks in terms of their ROAA during the period 1990-2002. It was clear that in order to be competitive and profitable, Greek's banks along with expanding their operations and improving their quality has to reduce their operating cost as well.

Thorsten Beck in (2008), conducted research on Bank Competitions and Financial Stability: Friends or Foes, in this paper an ambiguous prediction was made about the effect of bank stability. Through cross country research it was found that more concentrated banking systems are less likely to suffer from systemic banking distress while more competitive banking systems are also less likely to suffer from systemic banking distress. This paper provide a tentative conclusion that competition per se is not detrimental for banking system stability in a market-based financial system with the necessary supporting institutional frameworks.

KYRIAKI KOSMIDOUA and CONSTANTIN ZOPOUNIDIS in (2008), conducted research on Measurement of Bank Performance in Greece, in this paper author tried to evaluate the performance and efficiency of the commercial and cooperative banks in Greece for the period 2003-2004. It was clear from the results that commercial banks were tending to increase their accounts, to attract new customers and were becoming more competitive. These banks tried to hedge the financial risks in order to be more competitive among the European banking institutions.

Kim-Choy Chung in (2008), conducted research on Insolvency Prediction Model Using Multivariate Discriminant Analysis and Artificial Neural Network for the Finance Industry in New Zealand in these paper financial ratioswas used by author for differentiating between failed and non-failed financial companies in New Zealand. Through univariate test it was indicated that failed company's' financial ratios differ significantly from non-failed companies. It was clear that failed companies were less profitable and less liquid and they also had higher leverage ratios and lower quality assets.

YenerAltunbas and Philip Molyneux in (2007) conducted research on examining the Relationships between Capital, Risk and Efficiency in European Banking in this paper author made an attempt to analyse the relationship between capital, risk and efficiency for a large sample of European banks between 1992 and 2000. Empirical evidence showed that there was a positive relationship between risk on the level of capital (and liquidity), possibly indicating regulators' preference for capital as a mean of restricting risk-taking activities.

MedhatTarawneh in (2006) conducted research on A Comparison of Financial Performance in the Banking Sector: Some Evidence from Omani Commercial Banks, the purpose for conducting this research was to classify the commercial banks in Oman in cohesive categories on the basis of their financial characteristics revealed by the financial ratios. When it comes to practical dimensions, this study might help bank decision makers to focus on the major banking activities that might increase the bank ranking and financial performance positions comparing with other banks. The result of this study shows that it might be necessary for a bank management to take all the required decisions to enhance the financial positions of the bank.

Athanasoglou in (2005), conducted research on Bank-specific, Industry- specific and Macroeconomic determinants of bank profitability, in this author by using an empirical framework and incorporating traditional Structure-Conduct-Performance (SCP) hypothesis tried to examine the effect of bank-specific, industry-specific and macroeconomic determinants of bank profitability. The result of this study shows that profitability persists to a moderate extent, indicating that departures from perfectly competitive market structures may not be that large. All bank-specific determinants, with the exception of size, affect bank profitability significantly in the anticipated way.

AslıDemirgüç-Kunt and EnricaDetragiache in (2005), **conducted research onCross-Country Empirical Studies of Systemic Bank Distress: A survey,** in this paper two basic methodologies adopted in cross-country empirical studies, the signals approach and the multivariate probability model, and their application to study the determinants of banking crises were reviewed by author. As a result author provides a better understanding of how systemic bank fragility was influenced by a host of factors, ranging from macroeconomic shocks, the structure of the banking market, broad institutions, and institutions specific to credit markets, and political economy variables.

AS Cebenoyan and Philip E Strahan in (2004) conducted research on Risks management, capital structure and lending at banksin this paper author test the effect of management of bank credit risk exposure on capital structure, lending, profits, and risk. As a result this study suggests that banks that were able to manage credit risk may operate with greater leverage and may lend more of their assets to risky borrowers.

Christos K. Staikouras and Geoffrey E. Wood in (2004), conducted research on Risks management, capital structure and lending at banks,in this author identified that various internal and external factors that affect the rate of return earned by a financial institution. Results of study suggest that the profitability of European banks was influenced not only by factors related to their management decisions but also to changes in the external macroeconomic environment.

Evan Gatev and Philip E. Strahan in (2003) , conducted research on Bank's advantage in hedging liquidity risk: Theory and evidence from the commercial paper market , in this paper author tells about the unique ability of banks to hedge against market-wide liquidity shocks. When market liquidity dries up and CP spreads increase, banks experience funding inflows. These flows allow banks to meet increased loan demand from borrowers drawing funds from pre-existing commercial paper backup lines, without running down their holdings of liquid assets.

AhmetBurakEmel and RehaYolalan in (2003), conducted research on A credit scoring approach for the commercial banking sector, in this author tells that in this study author tells that various scoring methodologies were used by commercial banks to evaluate the financial performance of client firms.The discriminatory power of the DEA algorithm was tested against the results of judgmental, regression, and discriminant analyses. Results suggest that DEA offers a new item in the tool bag of methods for measuring the credit worthiness of firms.

Ross Levine in (2002), conducted research on Bank-Based or Market-Based Financial Systems: Which is better? In this paper author explains that many debates happened on the relative merits of bank-based versus market-based financial systems by economists and policy makers over a century. Results of this study indicated that although overall financial development was robustly linked with economic growth, there was no support for either the bank-based or market-based view.

BK Guru1 and J. Staunton (2002), conducted a study on Determinants of commercial bank profitability in Malaysiain this paper for providing practical guides for improved profitability performance author attempts to identify the determinant of successful commercial bank. Results of this study indicated that the commercial bank should focus on loan rather than investment in securities and subsidiaries in order to improve their performance.

Amir F. Atiya in (2001), conducted research on Bankruptcy Predictions for Credit Risk Using Neural Networks: A Survey and New Results, in this author in this author uses Neural Networks (NNs) with the sample of 128 firms for predicting the bankruptcy. It was clear from any studies that NNs are generally more superior to other techniques.

James Kolari and Michele Caputo in (2000), conducted research on Predicting Large U.S. Commercial Bank Failures, in this author uses empirical methods in order to predict the failures of U.S commercial banks. For this author uses both parametric method of logit analysis and the nonparametric approach of trait recognition. It was clear from the results

that trait recognition proved to be moreuseful than logit in a variety of tests, including overall accuracy, large bank failure accuracy, weighted efficiency scores, and stability using data from one year before, as well as two years before, failure.

Guoqiang Zhang and Daniel C. Indro in (1999), conducted research on Artificial neural networks in bankruptcy prediction: General framework and cross-validation analysis, A general framework for understanding the role of artificial neural networks (ANNs) in bankruptcy prediction was presented by author in this paper. For this author uses cross validation method to examine the between-sample variation of neural networks for bankruptcy prediction. Findings of this paper indicate that neural networks were significantly better than logistic regression models in prediction as well as classification rate estimation.

A Demirgüç-Kunt and Enrica in (1998), conducted research on the determinants of banking crisis in developing and developed countries, this research was conducted by author with the purpose to study the factors associated with the emergence of systematic banking crisis in a large sample of developing and developed countries inflation. Results of this research indicates that high rate of inflation is responsible for increased risk of banking sector , the reason for the same was high and volatile nominal interest rate associated with high inflation make it difficult for banks to perform maturity transformation..

H Jo in (1997), conducted research on Bankruptcy prediction using case based reasoning, neural network and discriminant analysis, in this paper author in order to predict Korean bankrupt and non-bankrupt firms author uses three techniques :(1) Multivariate discriminant analysis,(2) case-based forecasting, and (3) neural network. As a result of this paper it was clear that neural network performs better than the other two techniques (discriminant analysis and the case-based forecasting system). In this paper author showed the effects of the number of independent variables, the selection methods of the independent variables and the standardization. Neural network performs the best.

Stephen P. Curram and John Mingers in (1994), conducted research on Neural Networks, Decision Tree Induction and Discriminant Analysis: An Empirical Comparison, in this paper author provides a comparison on Neural Networks, Decision Tree Induction and Discriminant Analysis. It is clear from the results neural networks performed well on the datasets which were non-linear, and reasonably well across all the datasets while decision tree induction performed worse than the other two methods. Neural network was considered as a valuable tool for discriminant analysis.

Marcus D. Odom and Ramesh Sharda in (1990), conducted research on A Neural network model for bankruptcy prediction, in this paper both discriminant analysis and neural network were used to perform analysis on ratios. Ratios that were computed from the data for each original subsample were entered in conventional discriminant analysis program

and neural network. As a result of this paper neural network was prove more strong than the discriminant analysis method on reduced sample sizes.

Daesik Kim and Anthony M. Santomero in (1988), conducted research on Risks in Banking and Capital Regulation, in risk control the role of bank capital regulation was investigated in thi paper. In this paper it was shown that traditional uniform capital regulation is an ineffective way to control the probability of bank insolvency and in order to maintain safe and sound banking system bank capital regulation was used.

JAMES A. OHLSON in (1980), conducted research on Financial Ratios and the Probabilistic Prediction of Bankruptcy, in this paper author in this paper prediction of corporate failures as evidenced by the event of bankruptcy was done by the author. It was concluded by the author that predictive power of any model depends on the information which is assumed to be available. Additional predictors are require for significant improvement.

Altman in (1968) conducted research on financial ratios. Discriminant analysis and the prediction of corporate bankruptcy, in this paper assessment of the quality of ratio analysis as an analytical technique were done by the author. For this assessment data was collected from financial statements one reporting period prior to bankruptcy. As a result it was suggested that ratios were more statistically significant when they were used with a multivariate framework.

Research gaps

- Major researches conducted have focused on individual type of financial risk but not collectively on financial risk. Future research will be done on analysing the impact of financial risk on banks instead of its types.

- Most of the studies on impact of financial risk and its types on bank have been conducted outside India.

- Limited studies have been conducted on the relationship among various types of financial risk, like relationship between credit risk and liquidity risk.

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Motivation/Justification and Relevance

Why to conduct research on prediction of performance of banks?

The importance of study of financial risk felt after the financial crisis erupted in September, 2008 that thrown the economies around the recession. This resulted in a concern about the health of financial institutions. These recessions causes the failures of Lehman Brothers and Washington Mutual and led to government takeovers of Fannie Mae, Freddie Mac, and AIG. The research on relationship of bank's financial performance with risk is important as it will help to understand how financial risk will affect the performance of banks leading to financial distress or crises of banks. This financial risk also involves various factors that impact the performance of banks. All these worked as motivators for me to conduct research on this topic.

Researches on this topic have been conducted from time to time .On various search engines if we look for researches on prediction of financial performance , majority of them are conducted outside India (Greece , turkey , Malaysia , us) This fact suggested me to conduct research on effect of financial risk on performance of banks.

Objectives of Study

- The basic objective of this research is to predict the performance of banks on the basis of financial risk.
- The second objective of this research is to understand the impact of financial risk on performance of banks.
- To understand the factors used in measuring types of financial risk in banks.

Hypotheses

A *hypotheses* is a tentative statement about the relationship between two or more variables.

Ho (null hypotheses): financial risk does not have a significant impact on the performance of banks.

Ha (alternative hypotheses): financial risk has a significant effect on the performanceof banks.

Research Methodology

Research methodology is a term that basically means the science of how research is done scientifically. The process used to collect information and data for the purpose of making business decisions. The methodology may include publication research, interviews, surveys and other research techniques, and could include both present and historical information.

Research Design: A research design is a framework or blueprint for conducting the marketing research project. It details the procedures necessary for obtaining the information needed to structure or solve marketing research problems. Descriptive research design was adopted to collect data.

Sampling: sampling is the selection of a subset of individuals from within a statistical population to estimate characteristics of the whole population.

- Sampling universe: sampling universe is banking sector.
- Sampling unit: 38 public and private banks are selected from total banking industry.
- Sampling method: The banks for study will be selected based upon convenience of availability of required data.
- Sampling size: period of the collection of data for study will be of 10 years i.e. from 2008-2018.

Table of sample banks

Public Sector Banks

S no	Name	Year
1	Allahabad Bank	1986
2	Andhra Bank	1923
3	Bank of Maharashtra	1935
4	Canara bank	1906
5	Central Bank of India	1911

6	Corporation Bank	1906
7	Dena Bank	1938
8	Indian Bank	1907
9	Indian Overseas Bank	1937
10	Oriental Bank of Commerce	1943
11	Punjab National Bank	1894
12	Punjab & Sind Bank	1908
13	Syndicate Bank	1925
14	Union Bank of India	1919
15	UCO Bank	1943
16	Vijaya Bank	1931
17	IDBI Bank Ltd	1964
18	State Bank of India	1955

Private sector Banks

Sno	Bank	Year
1	AXIS Bank Ltd	1993
2	Citi Union Bank Ltd.	1904
3	Coastal Local Area Bank Ltd.	1999
4	DCB Bank Limited	1930
5	Dhanlaxmi Bank Ltd	1927
6	ICICI Bank Ltd	1994
7	IndusInd Bank Ltd	1994
8	Karnataka Bank Ltd	1924
9	Kotak Mahindra Bank Ltd.	2003
10	Krishna BhimaSamruddhi Local.	1999
11	RBL Bank	1943
12	The Catholic Syrian Bank Ltd.	1920
13	The Federal Bank Ltd	1931
14	The HDFC Bank Ltd	1994
15	The Jammu & Kashmir Bank Ltd.	1938
16	The KarurVysya Bank Ltd.	1916
17	The Lakshmi Vilas Bank Ltd	1926
18	The Nainital Bank Ltd.	1922
19	The south Indian Bank Ltd.	1929
20	Yes Bank Ltd	2004

Data collection method: The collection of data will be based on secondary sources. Data will be collected from website of Association of Banks, website of The economic times and from capital line (provided by the university). The frequency of collection data is annual i.e. financial data will be collected on annual basis.

Data Analysis Tools: In order to predict the impact of financial risk NEURAL NETWORK and MULTIPLE DISCRIMINATE ANALYSIS will be used and multiple regressions will be used to analyse the effect.

Model Frame work

The model for this study functionally becomes;

ROA= f(NPL/LA, LLP/CL, LA/TD, CD/TA, TMD/TD, STL/LA, LA/TA, equity prices, interest rates, credit spreads, foreign exchange rates, fiscal policy, economic growth, inflation, exchange rate)

CHAPETRIZATION PLAN

Chapter1: Introduction

This chapter will provide detail introduction about area of study i.e. "Financial Risk". This section will concentrate on the meaning of financial risk and types of the financial risk and factors to measure the type of risk.

Chapter 2: Research methodology

This chapter will explain the entire process of conducting research. This chapter will cover various aspect like research design, review of literature , sampling, data collection method , hypothesis etc.

Chapter 3: Analysis and interpretation of data

This chapter will provide detailed description regarding collection of data and its analysis using various tools and techniques and also hypothesis will be tested using various techniques in order to determine their status in terms of acceptance or rejection.

Chapter 4: Conclusion

In this chapter conclusion of research work will be given based upon findings of data analysed and the results obtained from the analysis.

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APPENDICES

S.no	Year	Title	Author	Objective	Research methodology	Observation & conclusion
1	2017	NON PERFORMING ASSETS OF PUBLIC AND PRIVATE SECTOR BANKS	BhawanaKumari	To analyse the position of NPAs in public and private sector banks of India.	Sampling period:2011-12 Method: ratio analysis	To reduce NPA banks should strengthen their credit rating mechanism
2	2016	Systematic and Unsystematic Risk Determinants of Liquidity Risk Between Islamic and Conventional Banks	Waeibrorheem	To investigate the influence of external and internal factors on liquidity risk of banks	Sample period:2000-2010 Method: multivariate regression analysis	4 out of 14 bank-specific factors and one macroeconomic factor significantly influence the liquidity risk of Islamic bank
3	2013	Determinants of Financial Performance of Commercial Banks in Kenya	Ongore	to examine the effects of bank specific and macroeconomic factors on performance of commercial banks in Kenya	Sampling unit : 37 commercial banks Method: Linear multiple regression model	bank specific factors significantly affect the performance of commercial banks in Kenya,
4	2013	The Relationship between Liquidity Risk and Credit Risk in Banks	BjörnImbierowicz	investigate the relationship between two main sources of bank's default risk i.e liquidity and credit risk	Sample period:1998-2010 Tools: bank balance sheet, profit & loss account	both risk categories do not have any time-lagged relationship between them.
5	2012	Determinants of profitability of	Kosmidou	Investigate the impact of bank-	Sample size: 32 commercial banks	capital strength of these banks

		domestic UK commercial banks: panel evidence from the period 1995-2002		specific characteristics, macro-economic conditions and financial market structure on commercial bank's profits	Sample period: 1995-2002 Method: Regression	has a positive and dominant influence profitability of banks
6	2012	CREDIT RISK AND COMMERCIAL BANKS' PERFORMANCE IN NIGERIA: A PANEL MODEL APPROACH	KOLAPO	Quantitative effect of credit risk on the performance of commercial banks in Nigeria.	Sampling period :11 years (2000-2010) Method: Panel model analysis	Credit risk on bank performance measured by return on assets was cross-sectional variant.
7	2012	The impact of credit risk management on the financial performance of Banks in Kenya for the period 2000 – 2006	DansonMusyoki	to assess various parameters significant to credit risk management as they affect financial performance of banks	Sampling size: 10 banks Method: regression	These parameters have an adverse impact on financial performance of banks.
8	2012	Liquidity risk and performance of banking system	Ahmed Arif	to evaluate the effect of liquidity risk on Pakistani banks profitability.	Sampling size: 22 Pakistani banks Sampling period: 2004-2009 Method: Multiple regressions	liquidity risk has a negative relationship with profitability.
9	2012	Bank Earnings Management and Tail Risk during the Financial Crisis	Lee J. Cohen	to show a pattern of earning management in	Method: regression	Earningsmanagement helps to predict bank performance during a crisis.

				bank financial statement		
10	2012	Prediction of bank financial strength ratings: The case of turkey	R Aktaş	to forecast ratings of banks with use of operational and financial variables	Sampling size: Turkish banks (26 ratios) Method: Multiple discriminant analysis	Suggest that the predictions are consistent with those of Moody's financial strength rating.
11	2012	Effect of credit risk management technique on the performance of unsecured bank loans employed commercial banks in Kenya	Prof. R.W Gakure	to identify the effect of credit risk management techniques on the performance of unsecured loans of commercial banks	Sample size: commercial banks	credit approval guidelines and monitoring of borrowers has an effect on performance of unsecured banks loans to a great extent
12	2011	Macroeconomic and bank specific determinants of non-performing loans in Greece: A comparative study of mortgage, business and consumer durable loan.	Panayiotis Athanasoglou	to examines the determinants of non-performing loans in banking sector in Greek	Sample period:2003-2009 Method: Panel data analysis	macroeconomic and bank specific variables have an effect on loan quality and these affects vary between different loan categories
13	2011	Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability: Empirical	DegerAlper	bank-specific and macroeconomic determinants of bank's	Sample period:2002-2010 Method: Panel data	Asset size and non-interest income have significant impact on profitability of banks.

		Evidence from Turkey		profitability in Turkey during the time period		
14	2011	Liquidity Risk Management: A comparative study between Conventional and Islamic Banks of Pakistan	Muhammad FarhanAkhtar	to investigate the significance of size of firm, networking capital, return on equity, capital adequacy and return on assets on liquidity risk management	Sample size:12 commercial banks Sample size: 2006-2009 Method: regression	Results show positive and insignificant relationship of size of the bank and networking capital to net asset with liquidity risk. .
15	2011	A comprehensive analysis of the effects of risk measures on bank efficiency: evidences from emerging Asian countries	Lei sun	to explore the risk in determining the cost efficiency of international banks in emerging Asian markets	Sample period: 1998-2008 Method: the parametric stochastic frontier approach (SFA) and the non-parametric data envelopment analysis (DEA)	Author found that each risk measure presents a dissimilar effect on banks' efficiency.
16	2011	Credit Risk Determinants of Public and Private Sector Banks in India	SomanadeviThiagarajan	to predict the determinants of credit risk in Indian commercial banking sector by using an econometric model	Sampling unit: 22 public and 15 private sector banks. Sampling period: 2001 to 2010 Method: Econometric model	non performing assets had a strong and statistically significant positive influence on the current non-performing assets.
17	2011	A Comparative Study of Non-Performing Assets in Indian Banking Industry	PachaMalyadri	to examine the state of affair of the Non-performing Assets (NPAs)	Sample period: 2004-2010 Data: secondary data Method: statistical tools (percentages and	the public sector banks have achieved a greater penetration compared to the private sector banks

				of the public sector banks and private sector banks in India	Compound Annual Growth Rate)	in the weaker sections.
18	2010	Does monetary policy affect bank risk-taking?	Altunbas	identify the relationship between short-term interest rates and bank risk	Sample period: 1998-2008	unusually low interest rates over an extended period of time contributed to an increase in banks' risk
19	2009	Financial crises and bank failures: a review of prediction methods	YuliaDemyanyk	to analyse the financial and economic circumstances associated with subprime mortgage crisis in the united states	Sample period 2006-2007 Method: NN, Support Vector Machine (SVM) and multivariate statistical methods	operations research techniques be more broadly applied in analyses of financial crises
20	2009	Using neural network and data mining techniques for the financial distress prediction model	WS Chen	to compare the performance of the financial distress prediction by using BPN and clustering model	Sample size: 68 listed companies (37 ratios) Method: Artificial neural network (ANN) and data mining technique	Artificial intelligence (AI) approach was considered more suitable methodology than traditional for predicting the potential financial distress of a company.
21	2009	Determinants of bank profitability: Evidence from the Greek banking sector	ConstantinosAlexiou	to know the effects of bank-specific and macroeconomic determinants of bank profitability	Sample size: 6 Greek banks Sample period:2000-2007 Method: Panel data analysis	Bank specific factor were found more significant in affecting the bank's profitability.

22	2009	Bank Liquidity Risk and Performance	Chung-HuaShen	To employ alternative liquidity risk measures besides liquidity ratio in order to investigate the causes of liquidity risk.	Sample size: 12 commercial banks Sample year: 1994-2006 Method: Regression , two stage least square	Liquidity risk was negatively related to bank performance in market based financial system while it has no effect on bank performance in bank-based financial system. .
23	2009	A cross model study of corporate financial distress prediction in Taiwan: Multiple discriminant analysis, logit, probit and neural networks models	Tzong-Huei Lin	to study the predictive accuracy of the three commonly used financial distress prediction models	Sampling period 1998-2005 Method: Multiple discriminate analysis (MDA), logit, probit, and artificial neural networks	To integrate the corporate governance variables with financial variables into the financial distress prediction models and compares the predictive ability with this study.
24	2009	Assessing Bank Performance with Operational Research and Artificial Intelligence Techniques: A Survey	MeryemDuygun-Fethi	To employ operational research (O.R.) and Artificial Intelligence (A.I.) techniques in the assessment of bank performance.	Sample size: 179 studies Method: data envelopment analysis and Neural network	Various numerous applications in O.R field were used by the author.
25	2008	Banks' Lending During the Financial Crisis of 2008	Victoria Ivashina	To determine the bank lending practices during financial crisis of 2008.	Sample period: 2006-2008	Banks with more revolving lines outstanding relative to deposits reduced their lending more

						than those with less revolving line exposure.
26	2008	The determinants of banks' profits in Greece during the period of EU financial integration	KyriakiKosmidou	To analysed how the bank's management decisions and policy objectives and the overall banking environment affected the performance of banks	Sample size: 23 banks Method: Regression	Greek banks have not only to expand their operations and improve the quality of their services but to reduce their operating costs as well.
27	2008	Bank Competitions and Financial Stability: Friends or Foes?	Thorsten Beck	This paper makes ambiguous predictions about the relationship between market structure and competitiveness of the banking system and banking sector stability.	Not specified	Bank-level analyses give less clear indications, however, and are often confounded with regulatory changes in the country being analysed.
28	2008	MEASUREMENT OF BANK PERFORMANCE IN GREECE	KYRIAKI KOSMIDOUA	To evaluates the performance and efficiency of the commercial and cooperative banks in Greece	Sample The data set in this study includes 14 commercial banks1 and 16 cooperative banks operating in Greece over the period 2003-2004.	commercial banks are tending to increase their accounts, to attract more customers and ameliorate their financial indices,

					Method: CAMEL rating system	thereby becoming more competitive and maximizing their profits.
29	2008	Insolvency Prediction Model Using Multivariate	Kim-Choy Chung	employed financial ratios for differentiating between failed and non-failed financial companies in New Zealand	Sample size: finance industry Method: Artificial Neural Networks , Multivariate Discriminant Analysis	The univariate tests indicate that failed company's' financial ratios differ significantly from non-failed companies.
30	2007	Examining the Relationships between Capital, Risk and Efficiency in European Banking	YenerAltunbas	Paper analyses the relationship between capital, risk and efficiency for a large sample of European banks between 1992 and 2000.	Sample period: 1992-2000. Method: Risk equation and capital equation	Empirical evidence is found showing the positive relationship between risk on the level of capital and liquidity
31	2006	A Comparison of Financial Performance in the Banking Sector: Some Evidence from Omani Commercial Banks	MedhatTarawneh	to classify the commercial banks in Oman in cohesive categories on the basis of their financial characteristics revealed by the financial ratios	Sample size: five Omani commercial bank Sample period: 1999-2003 Method: descriptive financial analysis	Results implies that it might be necessary for a bank management to take all the required decisions to enhance the financial positions of the bank.
32	2005	BANK-SPECIFIC, INDUSTRY-SPECIFIC AND MACROECONOMIC	Athanasoglou	to examine the effect of bank-specific, industry-specific	Sampling period:1985-2001 Method: Structure-Conduct-Performance	Profitability persists to a moderate extent, indicating that departures from

		DETERMINANTS OF BANK PROFITABILITY		and macroeconomic determinants of bank profitability	(SCP) hypothesis	perfectly competitive market structures may not be that large.
33	2005	Cross-Country Empirical Studies of Systemic Bank Distress: A survey	AslıDemirgüç-Kunt	reviews the two basic methodologies adopted in cross-country empirical studies, the signals approach and the multivariate probability model	Method:signals approach and multivariate probability model	this paper provides a better understanding of how systemic bank fragility is influenced by a host of factors, ranging from macroeconomic shocks
34	2004	Risks management, capital structure and lending at banks	AS Cebenoyan	To test how active management of bank credit risk exposure through the loan sales market affects capital structure, lending, profits, and risk	Sample size: all domestic commercial banks Method: Ratios analysis	Suggests that banks that improve their ability to manage credit risk may operate with greater leverage.
35	2004	The Determinants of European Bank Profitability	Christos K. Staikouras	To review the literature on bank performance studies and classifies the bank profitability determinants	Sample Period:1992-1999 Method: multiple regression framework	The profitability of European banks is influenced not only by factors related to their management decisions but also to changes in the external macroeconomic

						environment.
36	2003	BANKS' ADVANTAGE IN HEDGING LIQUIDITY RISK: THEORY AND EVIDENCE FROM THE COMMERCIAL PAPER MARKET	Evan Gatev	This paper argues that banks have a unique ability to hedge against market-wide liquidity shocks	Sample market: commercial paper market Method: asset-pricing model	the supply of cheap funds is sufficiently large so that pricing on new lines of credit actually falls as market spreads widen.
37	2003	A credit scoring approach for the commercial banking sector	AhmetBurakEmel	paper presents a new methodology for measuring the financial performance of firms for purposes of scoring credit worthiness	Sampling size: 82 industrial/manufacturing firms Method: Data Envelopment Analysis , regression and discriminant analysis	Results suggest that DEA offers a new item in the tool bag of methods for measuring the credit worthiness of firms.
38	2002	Bank-Based or Market-Based Financial Systems: Which is better?	Ross Levine	represents the first broad, cross-country examination of which view of financial structure is more consistent with the data	Sample size: 48 countries Sample period: 2002	Results indicate that although overall financial development is robustly linked with economic growth, there is no support for either the bank-based or market-based view.
39	2002	Determinants of commercial bank profitability in Malaysia	BK Guru	to identify the determinant of successful commercial bank	Sample size: commercial bank Sample period:1985-1998	commercial bank should focus on loan rather than investment in

					Method: Regression	securities and subsidiaries
40	2001	Bankruptcy Predictions for Credit Risk Using Neural Networks: A Survey and New Results	Amir F. Atiya	article reviewed the problem of bankruptcy prediction using NNs (Neural Networks)	Sampling size 128 firms Method: NN (Neural Network)	it can be seen that NNs are generally more superior to other techniques.
41	2000	Predicting Large U.S. Commercial Bank Failures	James Kolari	study applies empirical methods to the problem of predicting large U.S. commercial bank failures	Simple random sampling of 100 banks: 50 non-failed large banks and 50 failed banks Method: Computer-based early warning systems	trait recognition outperformed logit in a variety of tests, including overall accuracy, large bank failure accuracy, weighted efficiency scores
42	1999	Artificial neural networks in bankruptcy prediction: General framework and cross-validation analysis	Guoqiang Zhang	To presents a general framework for understanding the role of artificial neural networks (ANNs) in bankruptcy prediction	Sample size:220 firms Method: Artificial neural networks	neural networks are significantly better than logistic regression models in prediction as well as classification rate estimation.
43	1998	The determinants of banking crisis in developing and developed countries	A Demirgüç-Kunt	to study the factors associated with the emergence of systematic banking crisis in a large sample of developing and developed countries	Sample period: 1980-94 Method: Multivariate logit econometric model	an increased risk of banking sector problems may be one of the consequences of high rate of inflation

44	1997	Bankruptcy prediction using case based reasoning, neural network and discriminant analysis	H Jo	This paper uses three different techniques :(1) Multivariate discriminant analysis,(2) case-based forecasting, and (3) neural network to predict Korean bankrupt and non-bankrupt firms.	Sample size: 36 Korean bankrupt and non-bankrupt firms Method: Multivariate discriminant analysis, case-based forecasting, neural network	This paper empirically showed the effects of the number of independent variables, and the standardization neural network performs the best.
45	1994	Neural Networks, Decision Tree Induction and Discriminant Analysis: An Empirical Comparison	Stephen P. Curram	neural networks performed well on the datasets which were non-linear, and reasonably well across all the datasets	Sample size: Seven different datasets are used-four are real and three artificial	The results suggest that both LDA and neural networks are valuable tools for discriminant analysis.
47	1990	A Neural network model for bankruptcy prediction	Marcus D. Odom	to perform analysis on ratios using both discriminant analysis and a neural network.	Sampling period: 1975-1982. Sampling Size: 129 firms. Method: multivariate statistical technique	The neural network proved to be more robust than the discriminant analysis method on reduced sample sizes
48	1988	Risks in Banking and Capital Regulation	Daesik Kim	This paper investigates the role of bank capital regulation in risk control	Method: mean-variance model	traditional uniform capital ratio regulation is an ineffective way to control the probability of bank insolvency
49	1980	Financial Ratios and	JAMES A. OHLSON	To presents	Sampling period: 1970-	the predictive power

		the Probabilistic Prediction of Bankruptcy		some empirical results of a study predicting corporate failure as evidenced by the event of bankruptcy	1976 Method: Multivariate Discriminant Analysis	of any model depends upon when the information (financial report) is assumed to be available
50	1968	Financial ratios. Discriminant analysis and the prediction of corporate bankruptcy	Altman	To attempt an assessment of the quality of ratio analysis as an analytical technique.	Sample size:66 corporations Sample period:1946-1965 Method: Ratios analysis and multiple discriminant analysis	Ratios if analysed with a multivariate framework, will take on greater statistical significance than the common technique of sequential ratio comparison.